

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/058874 A1

(51) International Patent Classification⁷: C07D 401/14, A61K 31/4184, A61P 11/00, 31/12, C07D 401/06, 405/14 // (C07D 401/14, 235:00, 213:00, 211:00)

(21) International Application Number:
PCT/EP2004/053618

(22) International Filing Date:
20 December 2004 (20.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03104806.9 18 December 2003 (18.12.2003) EP
60/566,867 30 April 2004 (30.04.2004) US

(71) Applicant (for all designated States except US): TIBOTEC PHARMACEUTICALS LTD. [IE/IE]; Little Island, Co Cork (IE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BONFANTI, Jean-François [FR/FR]; 4 bis Route Nationale, F-27430 Andé (FR). ANDRIES, Koenraad, Jozef, Lodewijk [BE/BE]; Oosteneinde 9, B-2340 Beerse (BE). FORTIN, Jérôme, Michel, Claude [FR/FR]; 22, rue des acacias, F-27460 Igoville (FR). MULLER, Philippe [FR/FR]; 17 Route d'Herqueville, F-27430 Andé (FR). DOUBLET, Frédéric, Marc, Maurice [FR/FR]; 1646, Route de Neufchâtel, F-76230 Isneauville (FR). MEYER, Christophe [FR/FR]; 428 rue de Gouy, F-76520 Les Authieux s/l Port St Ouen (FR). WILLEBORDS, Rudy, Edmond [BE/BE]; Vaartstraat 70, B-2330 Merkplas (BE). GEVERS, Tom, Valerius, Josepha [BE/BE]; Burgemeester Bossaertlaan 17, B-2350 Vosselaar (BE). TIMMERMAN, Philip, Maria, Martha, Bern [BE/BE]; Vijversstraat 211, B-3550 Hasselt (BE).

(74) Agent: WANTE, Dirk; Tibotec-Virco Comm. VA, Generaal De Wittelaan 11B 3, B-2800 Mechelen (BE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

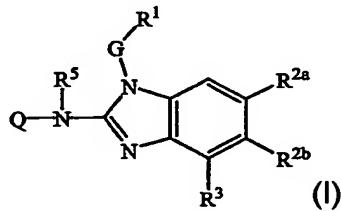
Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: 5- OR 6-SUBSTITUTED BENZIMIDAZOLE DERIVATIVES AS INHIBITORS OF RESPIRATORY SYNCYTIAL VIRUS REPLICATION



(57) Abstract: The present invention concerns 5- or 6-substituted-benzimidazole derivatives having inhibitory activity on the replication of the respiratory syncytial virus and having the formula (I) a prodrug, N-oxide, addition salt, quaternary amine, metal complex or stereochemically isomeric form thereof wherein Q is Ar², R⁶, pyrrolidinyl substituted with R⁶, piperidinyl substituted with R⁶ or homopiperidinyl substituted with R⁶, G is a direct bond or optionally substituted C₁₋₁₀alkanediyl; R¹ is Ar¹ or a monocyclic or bicyclic heterocycle; one of R^{2a} and R^{2b} is cyanoC₁₋₆alkyl, cyanoC₂₋₆alkenyl, Ar³C₁₋₆alkyl, Het-C₁₋₆alkyl, N(R^{8a}R^{8b})C₁₋₆alkyl, Ar³C₂₋₆alkenyl, Het-C₂₋₆alkenyl, Ar³aminoC₁₋₆alkyl, Het-aminoC₁₋₆alkyl, Ar³thioC₁₋₆alkyl, Het-thioC₁₋₆alkyl, Ar³sulfonylC₁₋₆alkyl, HetsulfonylC₁₋₆alkyl, Ar³aminocarbonyl, Het-(CH₂)_naminocarbonyl, Ar³carbonylaminoo, Het-carbonylaminoo, Ar³(CH₂)_ncarbonylaminoo, Het-(CH₂)_ncarbonylaminoo, and the other one of R^{2a} and R^{2b} is hydrogen; in case R^{2a} is hydrogen, then R³ is hydrogen; in case R^{2b} is hydrogen, the R³ is hydrogen or C₁₋₆alkyl. It further concerns their preparation and compositions comprising them, as well as their use as a medicine.

WO 2005/058874 A1



— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.